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Status and diversity of Beetles in different Agro ecosystems in Chikkamagaluru, Karnataka

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ABSTRACT

Western ghat is one of the centre of high biodiversity and renowned for its unique species including insects. The diversity of beetles is very wide ranging, they are found in almost all types of habitat. The present study focuses on the diversity of beetles in different agro ecosystem in Chikkamagaluru. The present survey was conducted for the period of five months from July to November 2015...Efforts were made to study the diversity of beetles in and around chikkamagaluru, in three different habitats such as coffee, Pepper and coconut plantations. During the present survey, total 18species of beetles belonging to 7 families Viz., Carabidae, Cerambycidae, Chrysomelidae, Coccinellidae, Curculionidae, Meloidae, and Scarabaeidae were recorded. The highest diversity was represented in the family Scarbaeidae with 8 species, followed by Chrysomelidae with 3 beetle species and family Carabidae and Meloidae with 2 species and family Cerambycidae, Coccinellidae and Curculionidae, representing one species each respectively. Myllocerus viridians are causing considerable defoliation of herbs, shrubs and trees. Holotrichia serrata causes a serious damage to the sugarcane and ground nut crops. Mylabris pustulata the young ones are beneficial to crops by suppressing other plant feeder which may serves as a biological control of other pest.

Keywords Beetles, Diversity, Chikkamagaluru, Western ghat, Coleoptera.

INTRODUCTION

Biodiversity is the term that is given to describe the variety of life on earth. Western Ghat is very rich in terms of biodiversity due to its unique bio geographic location, diversified climatic condition and enormous ecodiversity. Western ghat is known as hot spot of diversity in India because it shelter some of the world's only remaining population of threatened species of plants and animals.

The order Coleoptera includes beetles, is the most diverse order of class insecta .This is the largest order of insecta (Borer *et al*.,1984) with more

than 350,000 known species and new species. It constituting almost 25% of all known life form and about 40% of all described insect species are beetles. India contributes to a diversified beetle fauna comprises about 5% of all known species of the world. Coleoptera are found in nearly all natural habitats. They have successfully exploited both aquatic and terrestrial habitats. They are also found on vegetation, in caves, in soil, in decaying animal, on plant materials, in timber and in rotten wood and many are predators. Beetles are known for their bright metallic coloration though they may also be dull black or brownish (David and Ananthakrishna 2006).The beetles vary considerably in habits wide distribution and countless adaptation. They are generally herbivores, scavengers or predators, the greatest numbers are plant feeders such as nectar feeders, foliage eaters, and Seed eaters or bark eaters. Some beetle species are predators when in the larval form and plant feeders when adult. Beetles play important roles in ecosystem. Tenebrionidae act as primary decomposers (Henschell *et al.,)*

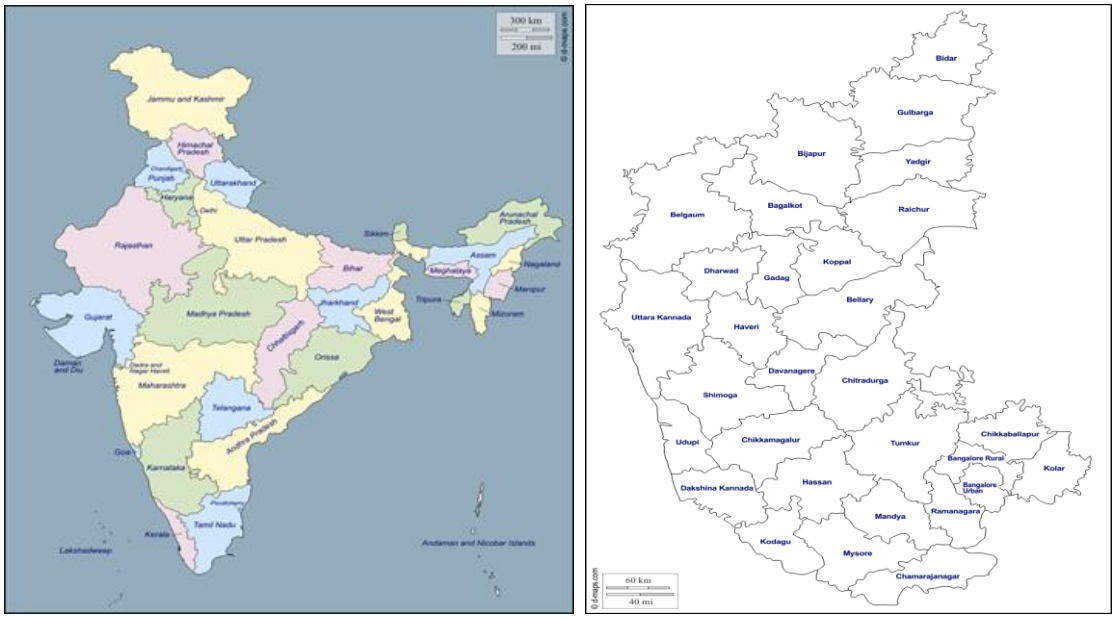
Many beetles are regarded as major pests of agricultural plants and stored products. Scavengers and wood boring beetles are useful as decomposers and recyclers of organic nutrients. Predatory species such as lady beetles are important biological control agents of aphids and scale insects. Scientific literature on beetles of Pakistan already reported by (Rafi *et al*.,2010)on tiger beetle,(Sultan *et al*.,2008)on tortoise beetle,(Darilmaz and Ahmed ,2009)on Coleoptera :Dystiscidae.

MATERIAL AND METHODS

Chikkamagaluru is situated in the foot hills of the Western Ghats of Karnataka between 12º 54′ 42″ and 13º 53′ 53″ North latitude and between 75º 04′ 46″ and 76º 21′ 50″ east longitude. It receives average rain fall of 1925 mm. The region with a wide forest types ranging from tropical wet evergreen forest to grassland.

The present study was carried out in three different agro ecosystems like coffee, pepper and coconut plantations. This study was carried out for five months (July to November 2015). The study was conducted in Kabbinasetuve and Lakya in cikkamagaluru, Karnataka, India. Kabbinasetuve is a small village in chikkamagaluru district of Karnataka State. It is located 15 km towards west of chikkamagaluru district. Lakya village is located in the chikkamagaluru district. It is located 12 km east from the chikkamagaluru.

Many beetles that live in habitat such as leaf, litter, dung& decaying food materials were handpicked. Sweep nets were used for collecting plant inhabiting beetles. Lures like cow dung or rotten banana peels were used for collecting dung beetles. After collecting, beetles were killed by using alcohol, hot water or kerosene. Beetles once killed can be preserved in dry method. Beetles mounted on pins and preserved in air tight beetle cabinet. The preserved beetles were identified by Prof.Belavadi, department of Entomology, GKVK Bangalore.



Map showing the study areas of chikkamagaluru.

RESULTS AND DISCUSSION

Study areas provides diverse habitat to various beetle species. During the present survey total 18 beetles were located during the study period from coffee, pepper and coconut plantation of chikkamagaluru. In this study 18 species belonging to 7 families Viz., Carabidae, Cerambycidae, Chrysomelidae, Coccinellidae, Curculionidae, Meloidae, and Scarabaeidae were recorded. The check list of coleoptera collected in the study area is given in Table 1. Scarabaeidae are known as dung beetles, with 8 beetle species which was the most dominant (44%) of all the families, probably due to the adults of these beetles are more noticeable due to their large size and bright colour, dung beetles feed on dung by burying and consuming dung, they improve nutrient recycling and soil structure. they also dispose the seeds present in animal dung. chrysomelidae with 3 beetle species was the second dominant (17%) of coleopteran reported in this study and these are commonly known as leaf beetles. Many of these are serious pests of cultivated plants. Some are beneficial due to their use in bio control of invasive weeds. Meloidae are known as blister beetles with 2 beetle species which was the third dominant (11%) family.

Table 1: Checklist of beetle in the study

S.N.	Family	Genera	Species
1	Carabidae	*Pheropsophus*	*bimaculatus*
		Chlaenius	*quadricolor*
2	Cerambycidae.	*Stibara*	*nigriocornis*
3	Chrysomelidae	*Chrysolina*	*americana*
		Zygogramma	*bicolorata*
		Sagra	*femorata*
4	Scarabaeidae.	*Cheilomenes*	*sexmaculata*
		Holotrichia	*serrata*
		oniticellus.	*cinctus*
		Onthophagus	*taurus*
		Heterorrhina	*elegans*
		Onitis	*alexis*
		Oryctes	*rhinoceros*
		Catharsius	*molossus*
5	Curculionidae	*Myllocerus*	*viridanus*
6	Meloidae	*Rhynchophorus*	*ferrugineus*
		Mylabris	*pustulata*
7	Coccinellidae	*Coccinella*	*transversalis*

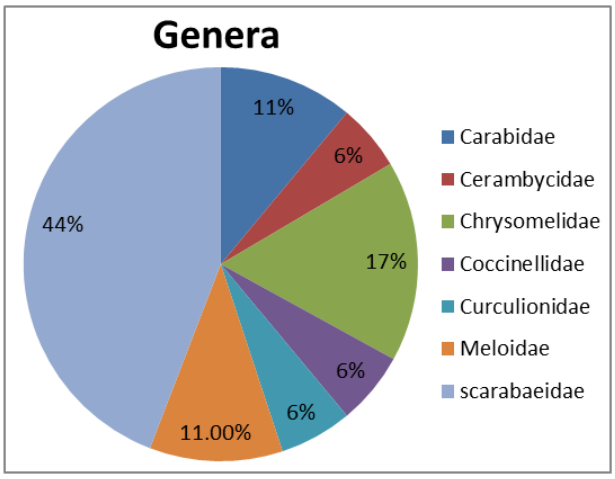


Fig 1: Family wise distribution of beetles in the study area.

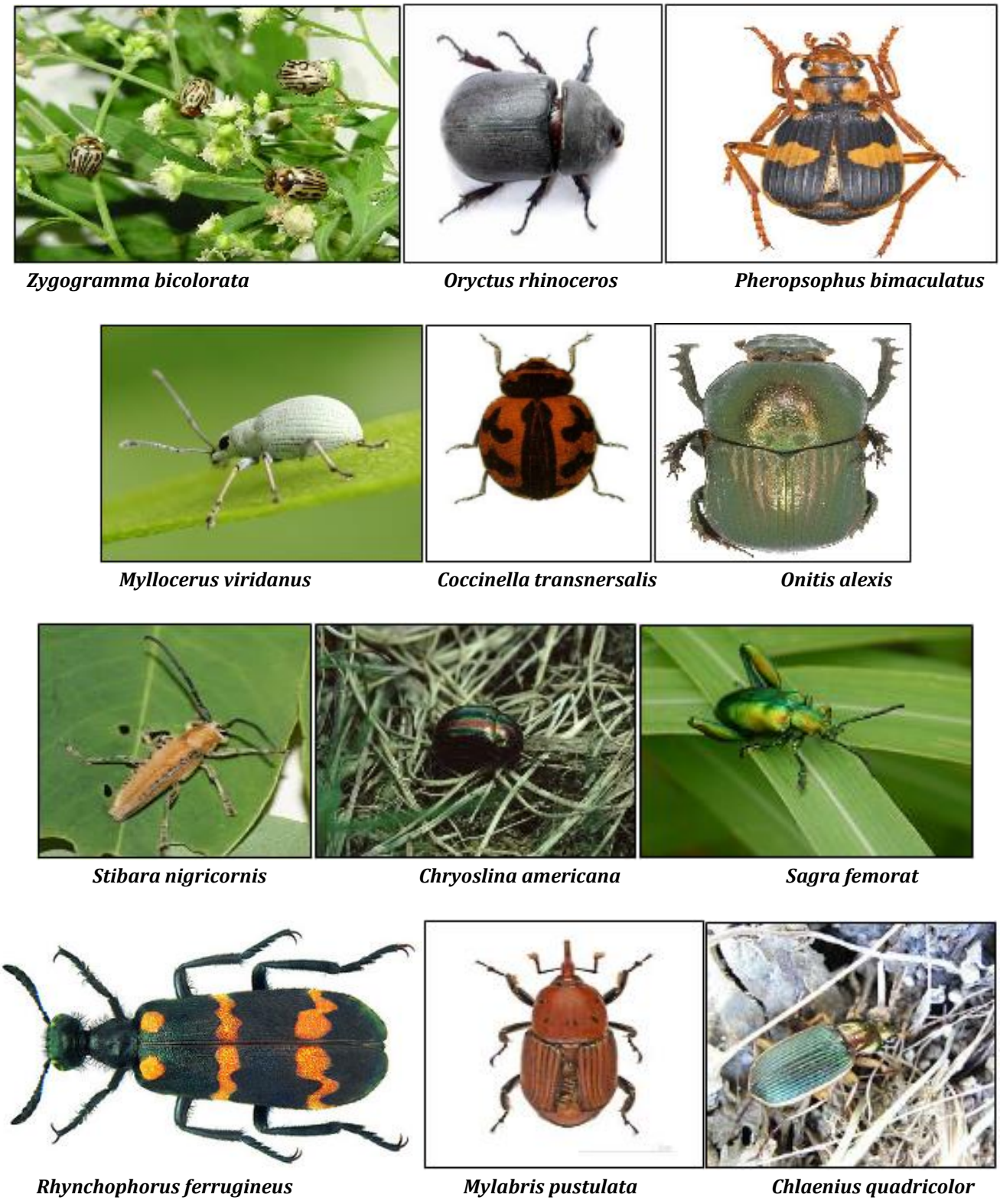


Fig.2: Beetles collected from different study area

Consumption of blister beetles by cattle or horses can cause death or serious illness. And family Carabidae(11%) with 2 beetle species, Carabidae beetles are commonly known as ground beetles, they are predatory and act as biological control agents adults and larvae are considered beneficial and will eat all most any type of insect. Coccinellidae, curculionidae and cerambycidae (6%) include 1 beetle species. family wise distribution of beetles is given in fig 1. And coccinellidae includes small beetles, they are commonly known as

lady beetles they are useful insects because they prey on aphids and scale insects which are agricultural pests.

CONCLUSION

During this study 18 species were collected belonging to 7 families, among these Scarabaidae family species were abundant with 8 beetle species, Chrysomelidae with 3 beetle species, Meloidae with 2 species and coccinellidae ,curculionidaeand cerambycidae with 1 beetle species each. These beetles were located in coffee, pepper and coconut plantations. This study provides useful information about diversity of beetles in the said area .A long term study is needed to observe the species occurrence in all seasons. It provides base line data for upcoming researchers and gives wide scope for further study.

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